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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/828,887

04/21/2004

Yisuo Li

CS03-028

5854

7590

04/06/2006

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EXAMINER

THOMAS, TONIAE M

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/828,887

Applicant(s)

LI ET AL.

Examiner

Toniae M. Thomas

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-16 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This Office action is responsive to the amendment filed on 21 November 2005.
2. Currently, claims 1-16 are pending.

#### ***Drawings***

3. The replacement drawing sheet received on 21 November 2005 is acceptable.

#### ***Specification***

4. The specification is objected to because of the following informalities: "A°" should be changed to "Å" (page 1, line 14; page 5, line 12; page 5, line 13; page 5, line 15; page 6, line 12; page 7, line 5; page 7, line 10; and page 8, line 3). Also, the subscript "t" in "V<sub>t</sub>" is not clearly distinguishable (page 6, line; page 6, line 10; page 6, line 14; page 6, line 18; page 6, line 20; page 7, line 3; and page 7, line 4 - both occurrences). Appropriate correction is required.

#### ***Claim Objections***

5. Claim 2 is objected to because of the following informalities: "25 Å 120Å" should be changed to "25 Å - 120 Å". Appropriate correction is required.

#### ***Response to Arguments***

6. Applicant's arguments, see page 9, lines 10-17, filed 21 November 2005 with respect to claims 1, 9, and 13 have been fully considered and are persuasive. Therefore, the rejection of claim 1 under 35 USC 102(b) and the

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rejection of claims 9 and 13 under 35 USC 103(a), as set forth in the Office action mailed on 12 September 2005, have been withdrawn.

The amendment filed on 21 November 2005 has overcome the objection to claims 10 and 14, and the rejection of claims 1-8 under 35 USC 112, second paragraph, as set forth in the Office action mailed on 12 September 2005. Accordingly, the objection and rejection have been withdrawn.

***Allowable Subject Matter***

7. Claims 1-16 are allowable over the prior art of record. It is known to form a silicon dioxide layer on a semiconductor substrate, form a silicon nitride layer on the silicon dioxide layer, form isolation trench regions in the substrate, and remove the nitride layer, as evidenced by Efland et al. (US 6,468,849 B1, see figs. 6A-6D and col. 7, line 51 - col. 9, line 3).<sup>1</sup> It is also known to perform a first implantation of dopant through a silicon dioxide layer, perform a second implantation of dopant through the silicon oxide layer to form wells, and remove the silicon oxide layer, as evidenced by Cho et al. (US 2004/0033658 A1 - see fig. 2C and par. 0016, lines 1-12; fig. 2D and par. 0019, lines 1-3). However, the prior art of record does not anticipate, teach or suggest a method of forming a semiconductor device substantially as claimed, wherein the method comprises forming a silicon dioxide layer on a semiconductor substrate, forming a silicon nitride layer on the silicon dioxide layer, forming

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<sup>1</sup> The Efland et al. reference was relied upon in the previous Office action mailed on 12 September 2005.

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isolation trench regions in the substrate, removing the nitride layer, and performing a first implantation through the silicon dioxide.

**Conclusion**

8. This application is in condition for allowance except for the formal matters discussed above.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

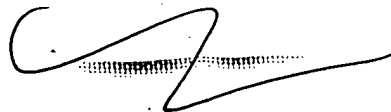
A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toniae M. Thomas whose telephone number is (571) 272-1846. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TMT  
02 April 2006



**Mary Wilczewski**  
Primary Examiner